

REMARKS/DISCUSSION OF ISSUES

By this Amendment, Applicants: amend claims 1, 3, 4, 6, 15, 17, 18 and 20; cancel claims 21-27 without disclaimer of the underlying subject matter or prejudice against presentation in a subsequent divisional patent application; and add new claims 28-32.

Accordingly, claims 1, 3, 4, 6, 12-15, 17, 18, 20 and 28-32 are pending in the application.

Reexamination and reconsideration are respectfully requested in view of the following Remarks.

35 U.S.C. § 103

The Office Action rejects the previously-pending claims 1, 3, 6, 12, 13 and 27 under 35 U.S.C. § 103 over Mathews et al. U.S. Patent 6,686,649 ("Mathews") in view of Luce et al. U.S. Patent 4,008,564 ("Luce"), and rejects claims 14, 15, 17 and 20 under 35 U.S.C. § 103 over Mathews in view of Luce and further in view of Kirkpatrick U.S. Patent Publication 2002/0186618 ("Kirkpatrick").

Applicants respectfully submit that all of the pending claims as amended are patentable over the cited art for at least the following reasons.

Claim 1

Among other things, the circuit of claim 1 includes a heat-conducting structure immediately adjacent to the electronic component and increasing a thermal mass of the electronic component so as to reduce a thermal drift of the electronic component. Such a feature is clearly shown in the present application in the exemplary embodiment of FIG. 2 where it is seen that structure 14 (e.g., a metal case such as copper or aluminum) is provided immediately adjacent to electronic component 10. The specification teaches that structure 14 increases the thermal mass of electronic component 10, so it follows that it must be heat-conducting.

Mathews does not disclose any such heat-conducting structure immediately adjacent to the electronic component 104 and increasing a thermal mass of the electronic component 104 so as to reduce a thermal drift of the electronic

component. The only component immediately adjacent to electronic component 104 is encapsulant 140. There is no teaching or suggestion in Mathews that encapsulant 140: (1) is heat conducting; (2) increases the thermal mass of electronic component 104; or (3) reduces a thermal drift of the electronic component 104.

Meanwhile, in Luce, can 40 is not immediately adjacent to any electronic component, and does not increase the thermal mass or reduces the thermal drift of any electronic component. Indeed, Luce specifically teaches that can 40 must be isolated from circuit traces on substrate 10. Similarly, Luce does not disclose or suggest that potting material 46: (1) is heat conducting; (2) increases the thermal mass of any electronic component; or (3) reduces a thermal drift of the electronic component.

So no combination of Mathews and Luce could produce the circuit of claim 1. Claims 3, 4, 6, and 12-14

Claims 3, 4, 6, and 12-14 all depend from claim 1 and are deemed patentable for at least the reasons set forth above with respect to claim 1, and for the following additional reasons.

In claim 3, the structure comprises a metal case. It is noted, for example, that neither encapsulant 140 in Mathews, nor potting material 456 in Luce, can be a metal case. So claim 3 is deemed patentable over the cited art for at least this additional reason.

In claim 6, a thermal insulator encases the heat-conducting structure. No such insulator is suggested anywhere in the cited references. In particular, for example, Mathews does not disclose that dielectric cap is a thermal insulator, nor that it encases encapsulant 140. So claim 6 is deemed patentable over the cited art for at least this additional reason.

Claim 15

Among other things, the system of claim 15 includes a heat-conducting structure immediately adjacent to a crystal component and increasing a thermal mass of the crystal component so as to reduce a thermal drift of the crystal component.

For similar reasons to those set forth above with respect to claim 1, Applicants respectfully submit that claim 15 is patentable over the cited art.

Claims 17, 18 and 20

Claims 17, 18 and 20 all depend from claim 15 and are deemed patentable for at least the reasons set forth above with respect to claim 15, and for the following additional reasons.

In claim 17, the structure comprises a metal case. It is noted, for example, that neither encapsulant 140 in Mathews, nor potting material 456 in Luce, can be a metal case. So claim 17 is deemed patentable over the cited art for at least this additional reason.

In claim 20, a thermal insulator encases the heat-conducting structure. No such insulator is suggested anywhere in the cited references. In particular, for example, Mathews does not disclose that dielectric cap is a thermal insulator, nor that it encases encapsulant 140. So claim 20 is deemed patentable over the cited art for at least this additional reason.

NEW CLAIMS 28-32

Among other things, the circuits of claims 28-32 all include means for increasing a thermal mass of a crystal component so as to reduce a thermal drift of the crystal component.

Applicants respectfully submit that no combination of the cited art would produce any circuits including such means.

Also, claims 29-32 recited additional novel elements (e.g., the Styrofoam of claim 32) that are not disclosed by any combination of the cited art.

Accordingly, for at least these reasons, Applicants respectfully submit that claims 28-32 are all patentable over the cited art.

CONCLUSION

In view of the foregoing explanations, Applicants respectfully request that the Examiner reconsider and reexamine the present application, allow claims 1, 3, 4, 6,

12-15, 17, 18, 20 and 28-32 and pass the application to issue. In the event that there are any outstanding matters remaining in the present application, the Examiner is invited to contact Kenneth D. Springer (Reg. No. 39,843) at (571) 283.0720 to discuss these matters.

Respectfully submitted,

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